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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/028,173	12/21/2001	James Michael Larson	57411US002	2831

32692 7590 06/23/2005

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EXAMINER

PARKER, FREDERICK JOHN

ART UNIT	PAPER NUMBER
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1762

DATE MAILED: 06/23/2005

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**BEFORE THE BOARD OF PATENT APPEALS
AND INTERFERENCES**

Application Number: 10/028,173
Filing Date: December 21, 2001
Appellant(s): LARSON, JAMES MICHAEL

Philip Y. Dahl
For Appellant

EXAMINER'S ANSWER

MAILED
JUN 23 2005
GROUP 1700

This is in response to the appeal brief filed May 13, 2005.

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(1) *Real Party in Interest*

The real party in interest is 3M Company of St. Paul, Minnesota and its affiliate 3M Innovative Properties of St. Paul, Minnesota

(2) *Related Appeals and Interferences*

The Examiner is not aware of any related appeals, interferences and judicial proceedings which will directly affect or be directly affected by or have a bearing on the decision in the pending appeal .

(3) *Status of Claims*

The statement of the status of the claims contained in the brief is correct.

(4) *Status of Amendments After Final*

The appellant's statement of the status of amendments after final rejection contained in the brief is correct.

(5) *Summary of Claimed Subject Matter*

The summary of claimed subject matter contained in the brief is substantially correct. An additional paragraph outlining intended use taken from the Specification is included here as well as in Argument section, where the Examiner will provide a reply.

(6) *Grounds of Rejection to be Reviewed on Appeal*

The appellant's statement of the grounds of rejection is correct.

(7) *Claims Appendix*

The copy of the appealed claims contained in the Appendix to the brief is correct.

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(8) Evidence Relied Upon

4,293,396 ALLEN et al 10-1981

2002/0134501 FAN et al 09-2002

(10) Grounds of Rejection

The following ground(s) of rejection are applicable to the appealed claims:

Claim Rejections - 35 USC § 103

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

2. The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
 2. Ascertaining the differences between the prior art and the claims at issue.
 3. Resolving the level of ordinary skill in the pertinent art.
 4. Considering objective evidence present in the application indicating obviousness or nonobviousness.
3. Claims 1-5 are rejected under 35 U.S.C. 103(a) as being unpatentable over Allen et al US 4293396 in view of Fan et al US 2002/0134501.

Allen et al teaches forming a gas diffusion layer for fuel cells, in which woven cloth fabrics, including PANEX (which Applicants cite in specification page 4, 9 as a plain weave carbon cloth), to which is applied a suspension of carbon and TEFLON (TFE, a highly fluorinated polymer per Specification page 6) so that the mixture penetrates at least a portion of the cloth

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thickness, followed by drying (col. 5, 8-28) to form a coated plain-weave carbon cloth. There is no attachment of the cloth to another layer in the Allen reference. Subsequent compression is not cited.

Fan et al also teaches forming gas diffusion barriers for fuel cells in which a slurry of carbon, TFE, and a liquid vehicle are applied to a carbon cloth substrate, dried, and then “rolled to substantially eliminate cracks” in the coating. While the amount of compression of the coated cloth is not cited, it would have been apparent to one of ordinary skill to adjust pressure for a given cloth and coating to eliminate cracks while not disturbing/ deforming the coating or cloth. The goal of the roller compression is cited to be to eliminate cracks, which one skilled in the art would have recognized would prevent leakage/ electrical shorting or break-down in fuel cells, as well as providing the added advantage of improving adherence of the TFE-carbon layer with the cloth. Thus, it is the Examiner’s position that, given the identical use and outcomes of Applicant’s claims and the combination of prior art, the compression values represent optimization by routine experimentation of known process parameters clearly disclosed by the prior art, and would not appear to patentably distinguish over the prior art.

As to article claims 4-5, it is the Examiner’s position that the product by process claims would have been obvious in view of the fact that the process of making would have been obvious in view of the cited prior art. There is simply no structure or evidence to support the patentability of the product claims over the cited prior art.

It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the method of Allen et al by applying compression as taught by Fan et al to provide the motivating benefits of improving coating-cloth adherence and substantially

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eliminating cracks which would have been detrimental to the performance of the fuel cells in which the gas diffusion barrier products are used.

(11) Response to Argument

Claims 1-5 are rejected under 35 U.S.C. 103(a) as being unpatentable over Allen et al US 4293396 in view of Fan et al US 2002/0134501.

It is observed that both the Examiner and Appellant agree that the primary issue at hand is the limitation of “compressing said coated plain-weave carbon fiber cloth to a compression of 25% or greater”, and compressions of claims 2-3.

On page 3 of the Brief, Appellant argues “all claim limitations must be taught or suggested by the prior art” and cite supporting case law, reasoning the Examiner’s rejections cannot render the instant claims obvious because the cited references do not teach or suggest “compressing said coated plain-weave carbon fiber cloth to a compression of 25% or greater”. The Examiner adds it is also well settled that the test for obviousness is what the combined teachings of the references would have suggested to one of ordinary skill, In re Keller 208 USPQ 871. It is further well established that the skilled artisan is presumed to know something about the art apart from what the references disclose, In re Jacoby 135 USPQ 317; In re Sovish 226 USPQ 771. These issues become apparent to the reader in the discussions below.

Appellant argues that Fan et al does not teach “compressing said coated plain-weave carbon fiber cloth to a compression of 25% or greater”. However, Fan teaches rolling a coated carbon cloth “through two rolls with a certain pressure” (which pressure the skilled artisan would appreciate depends on thickness/ coating considerations) [0030]/ line 18, to substantially

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eliminate cracks. Applicants argue that this does not “imply any compression at all”. It is the Examiner’s position that application of pressure between two roller MUST cause at least some degree of compression to the surfaces of the coated cloth being contacted (see Fan, figure 2; rollers 26). These rollers are not simply transport rollers but dual rollers with a nip there-between to treat the coated cloth to substantially eliminate cracks, and that would necessarily require compression. They are similar to those of Appellants specification, wherein page 12, lines 3-6 uses calendaring rolls with a “set gap width” (e.g. a nip distance), which is, for all intents and purposes, the same as Fan et al. The Examiner maintains compression MUST occur in both cases. Even if, as Appellant speculates, compression in Fan might occur at only the surface (“superficial deformation” as argued on bottom of page 3 of Brief) to eliminate cracks, the instant claims as written do NOT require anything else. The claims do NOT require compression of 25 % or greater across the entire thickness. Compression of the coated cloth must occur in Fan, and it is the Examiner’s position that it would need to be at least 25 % to achieve the stated outcomes for at least some thicknesses/ coatings; it is incumbent upon the Applicants to supply evidence to the contrary, not mere conjecture, to persuade the Examiner otherwise. No such evidence is presented. The Examiner notes that while Appellants claims and the cited prior art may carry out the processes for different benefits, the purposes as to why one of ordinary skill would have found the claimed subject matter to be obvious under 35 USC 103 need not be identical to the purpose or problem stated by Appellants, In re Beattie 24 USPQ2d 1040.

Applicants further argue on page 3- bridging page 4 (and as discussed under “Summary of Claimed Subject Matter”) that the claimed glass diffusion layer (GDL) “can be incorporated” (emphasis added) into an MEA comprising a PEM without increasing shorting, with reference

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back to the specification. The Examiner submits such arguments (1) are merely directed at potential intended use applications not required by the claims, (2) ignore the fact the claims fail to require use of MEA, PEM, or limitations regarding shorting characteristics, such that these arguments are not commensurate with the scope of the claims on Appeal and (3) are predicated on Appellant's reading limitations from the specification into the claims regarding MEA's and thicknesses to assert patentability. Although claims are read in light of the specification, this is different from reading limitations into a claim having no express basis in the claim in order to narrow the scope of that claim, *In re Parter* 162 USPQ 541. Such arguments are therefore not convincing.

In response to the second argument on page 4 that Fan and the instant application do not share identical usage and outcome, the Examiner maintains both Appellant's claims and the cited prior art share methods of forming gas diffusion layers for electrochemical cells comprising applying similar coatings to carbon cloth substrates (Allen specifically using plain weave cloth). Fan et al further incorporates transporting the coated cloth between rollers to substantially eliminate cracking which the Examiner contends MUST include compression, with degrees of compression imposed by the rollers meeting limitations of Appellant's claims. Appellant argues the Examiner has shown no nexus between prevention of cracks and reduction of shorting across the PEM, but the Examiner reminds the reader the instant claims never require reduction of shorting, nor, for that matter, any relationship with a PEM component. All the claim requires are the steps 1 a-c; the claim steps themselves do not even require or refer back to the "making of a gas diffusion layer for an electrochemical cell" of the preamble. Nonetheless that IS exactly the intent of both Allen et al and Fan et al.

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Thus for all the reasons stated , it is believed that the rejections should be sustained.

Respectfully submitted,

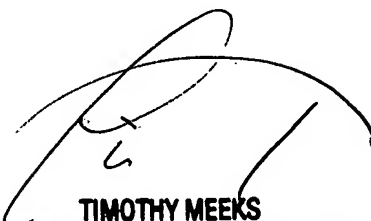

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